

REMARKS

The Office Action of February 26, 2007 has been received and carefully reviewed. It is submitted that, by this Response, all bases of rejection are traversed and overcome. Upon entry of this Response, claims 1-16 and 24-31 remain in the application. Reconsideration of the claims is respectfully requested.

Claims 1-16 and 24-31 stand rejected under 35 U.S.C. §102(b) as being anticipated by Zappella et al. (U.S. Patent No. 6,297,069). The Examiner states that Zappella discloses a method of forming an electronic device having a chamber, wherein the method includes preparing an outer surface of a solidified bifunctional core material (32) in a depression formed in a substrate (10). The Examiner points out that preparing the outer surface includes applying a supporting material to a cavity and then curing the material. The Examiner states that the method further includes “establishing a layer on the outer surface and a portion of the substrate surrounding the depression to define a chamber, in step 250, Zappella et al. deposit a layer of material on the support material and substrate thus forming a chamber.” The Examiner further states that Zappella teaches changing the state of the support (core) material to a fluid and removing it from the chamber. The Examiner further states that the core material can be a low melting point wax.

Applicants' method, as recited in claim 1, includes 1) preparing an outer surface 336 on a solidified bifunctional core material 334, the solidified bifunctional core material 334 in a depression formed in a substrate 314 (see Applicants' Fig. 3B, reproduced below); and 2) establishing a layer 338 on the prepared outer surface of the solidified bifunctional core material 334 and a portion of the substrate 314 surrounding the depression, the established layer 338 and the substrate 314 defining a chamber 350 (see Applicants' Fig. 3D, reproduced below, which depicts the removal of the bifunctional core material 334).

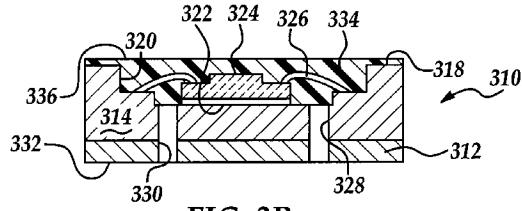


FIG. 3B

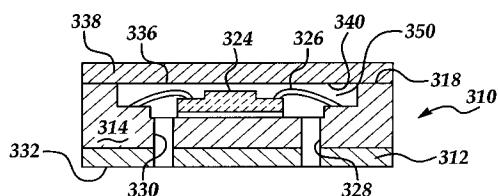


FIG. 3D

Applicants submit that the Examiner is misinterpreting the teachings of Zappella. In fact, Zappella does not teach or suggest forming a chamber in an electronic device (as do the Applicants).

Fig. 10, relied upon by the Examiner to support his conclusions, actually teaches a method in which **two different layers** are established on or in **two different surfaces** of the substrate. Applicants have reproduced below Figs. 11A, 8A and 8B of Zappella to assist in the discussion of the method of Fig. 10.

Zappella's method, in part, includes:

- 1) Placing the first surface 12 of the substrate 10 (added for clarification to Fig. 11A below) on the backing sheet 44 and work surface 42;
- 2) Applying a supporting material 32 to 1) a cavity in the substrate 10, and 2) **about the periphery** of the substrate 10.

Per step 2, some of the supporting material 32 fills the cavity, and some of the supporting material abuts the substrate 10 near its first surface 12. As stated in Zappella, at Col. 11, lines 34-37, "the contact between the supporting material 32 and the work surface 42 forms a surface 38 (shown in Figs. 8A and 8B, reproduced below) of the supporting material 32 that is coplanar with the first surface 12 of the micro-electronic substrate 10" (emphasis and explanation added).

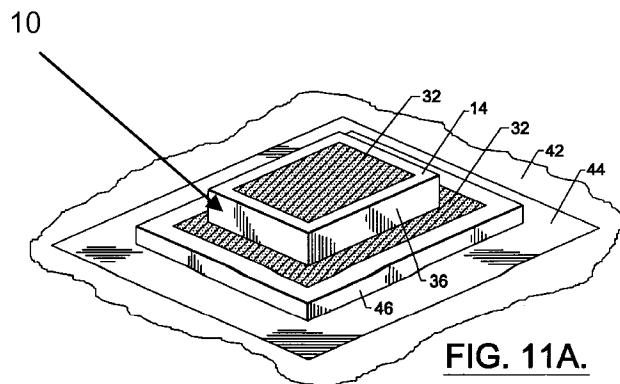


FIG. 11A.

After curing and removing the substrate 10 and supporting material 32 from the backing layer 44/work surface 42, Zappella's method further includes:

- 3) Removing the substrate 10 and the supporting material 32 from the work surface 42 such that subsequent manufacturing processes may be performed on the substrate 10 (see Col. 11, lines 40-44).

Figs. 8A and 8B (below) illustrate the substrate 10 removed from the work surface 42 (shown in Fig. 11A) and inverted (as indicated by the arrows) such that subsequent manufacturing may be accomplished on the first surface 12 and coplanar surface 38, as required by step 250 in Fig. 10. The method of Zappella also includes:

- 4) "depositing a layer of material 34 **on the first surface 12** of the micro-electronic substrate 10 and **at least a portion of the surface 38** of the supporting material 32 that is coplanar with the first surface 12 of the micro-electronic device 10" (Col., 11, lines 45-49). This step is clearly shown in Figs. 8A and 8B.

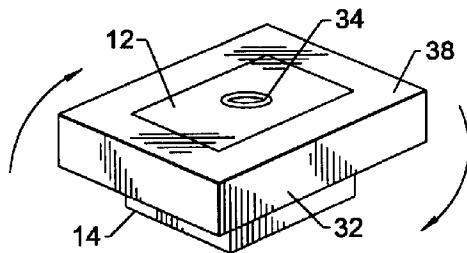


FIG. 8A.

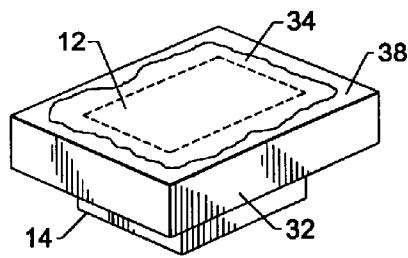


FIG. 8B.

As illustrated in Figs. 8A and 8B, the second surface 14 (having the cavity 16 filled with support material 32) defined therein **does not have** the additional material layer 34 established thereon. **Zappella neither teaches nor suggests that the layer 34 is established on the second surface 14 or on the support material 32 in the cavity 16.** As such, Applicants respectfully submit that their invention as defined in claim 1, is distinguishable from Zappella, at least in part because the material layer of Zappella is **not** applied on the second surface 14 of the substrate, which has the depression (or cavity 16) defined therein. As shown in the Figures above, the material layer 34 of Zappella is applied to the surface 12 that is **opposite** to the surface 14 having the cavity defined therein.

Applicants reiterate that the method of Zappella is in sharp contrast to Applicants' invention as defined in claim 1, which (as outlined above) recites that the layer is established "on the prepared outer surface of the solidified bifunctional core material and a portion of the substrate surrounding the depression." Applicants are clearly establishing the layer 338 (allegedly equivalent to Zappella's material layer 34) on the core material 334 that is located in a depression formed in the substrate 314.

Applicants further submit that Zappella does not teach or suggest forming a chamber between the substrate and a layer by application of the layer to the core material that is established in a depression of the substrate. The essence of

Zappella is that the material layer 34 is applied to the first surface 12 of the substrate 10 and to the support material 32 that is coplanar (i.e., layer 38) with the first surface 12. This planar surface is clearly not a cavity. (See Col. 3, lines 19-22; Fig. 8B (reproduced above)). In fact, the cavity 16 of Zappella is located in the surface 14 opposite the first and coplanar surfaces 12, 38.

The Examiner's attention is now directed to rejected claim 24. Claim 24 includes a similar method step as claim 1, which states, "Establishing a layer on the bifunctional core material and the substrate, **the layer and substrate defining a sealed chamber** therebetween." For all of the reasons and arguments presented above for claim 1, Applicants submit that independent claim 24 is also distinguishable from Zappella.

Applicants agree that both their claim 1 and the method disclosed in Zappella include the deposition or establishment of at least two layers on a substrate. However, the arrangement of the deposited or established layers is **different**, where one configuration results in the formation of a chamber between a substrate 314 and a layer 338 (i.e., Applicants' claim 1), and the other configuration results in the formation of a planar layer 34 on a substrate surface 12 with a cavity 16 in an opposed surface 14 (i.e., Zappella).

Furthermore, Applicants submit that one skilled in the art would not be led to provide the layer of Zappella (e.g., flowable material 34) over the supporting material 32 in the cavity 16. The additional material layer 34 taught in Zappella is deposited directly on the planar surface of the micro-electronic substrate such that the layer 34 may be patterned to precisely define conductive pads, traces and/or interconnects/bumps that are to be **deposited on the micro-electronic substrate**. Incorporating the additional material layer 34 on the supporting material 32 in the cavity 16 would not achieve this goal. Furthermore, it is submitted that the formation of conductive pads, traces and/or

Appln. S.N. 10/807,887
Amdt. dated May 17, 2007
Reply to Office Action of February 26, 2007
Docket No. 200208977-1
Page 11 of 11

interconnects/bumps would not be particularly useful if deposited on the supporting material 32 in the cavity 16.

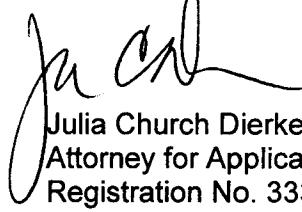
For all the reasons stated above, it is submitted that Applicants' invention as defined in independent claims 1 and 24 is not anticipated by Zappella, either alone or in combination, and patentably defines over the art of record. Claims 2-16 and 25-31 depend ultimately from one of claims 1 or 24. It is submitted that, through this dependency, Applicants' invention as defined in these claims is also not anticipated by Zappella, either alone or in combination, and patentably defines over the art of record.

In summary, claims 1-16 and 24-31 remain in the application. It is submitted that, through this response, Applicants' invention as set forth in these claims remains in a condition suitable for allowance.

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, he is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

DIERKER & ASSOCIATES, P.C.



Julia Church Dierker
Attorney for Applicants
Registration No. 33368
(248) 649-9900, ext. 25
juliad@troypatent.com

3331 West Big Beaver Rd., Suite 109
Troy, Michigan 48084-2813
Dated: May 17, 2007
JCD/JRK/hmp